

indicating various materials as set forth in MPEP § 608.02. A corresponding set of marked-up drawings as required by MPEP § 608.02(v) are also submitted herewith. The areas in the figures that have been changed are highlighted in yellow. The changes to the drawings have been made primarily to properly indicate where plastic materials are used and to properly reflect holes. Additionally, Figs. 25-27 have been properly annotated as being directed to the prior art as required by MPEP § 608.02(g). As the drawing formalities have been addressed, the revised drawings should be entered, and the objection to the drawings should be withdrawn.

The specification was objected to because of the reference to a trademarked material as Eval. The reference to this material has been amended in the specification to properly read as "EVAL" with a corresponding chemical description "ethylene-vinyl alcohol copolymer" along with the indication of its source, Kurary Co., LTD., Osaka, Japan. As the objection has been fully addressed, it should be withdrawn.

Claims 120 and 136 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for reciting the Trademark "Eval." Claims 120 and 136 have been amended, replacing "Eval" with a proper chemical description "ethylene-vinyl alcohol copolymer." As the claim amendments remove the indefiniteness, the rejection of claims 120 and 136 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

The present invention is directed to a printed wiring board-forming sheet that includes an insulating resin sheet having a through hole inserted and filled with a conductive metal chip of substantially the same shape as the hole. The conductive metal chip is formed by punching at least one conductive metal sheet selected from a solder sheet, a solder-plated metal sheet, and a copper alloy sheet. The present invention provides improved electrical connections between the surfaces of a resin sheet.

Claims 116-120 and 135-136 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,750, 278 to Baker et al. (hereinafter “the Baker patent”).

The Baker patent discloses a printed circuit board having a through connection between conductors on opposite sides of the board provided by a conductive element press-fitted in a hole extending through the conductors and insulating material of the circuit board and peened at both ends.

However, the Baker patent does not disclose, or in any way suggest, that the conductive element (conductive metal chip of the present invention) is made of at least one conductive metal sheet selected from a solder sheet, a solder-plated metal sheet, and a copper alloy sheet as in the present invention.

The Baker patent describes the use of “[e]lectrically conductive stock material in the form of a strip 19, preferably of a thickness equal to or greater than the thickness of the circuit board.” When a conductive metal sheet selected from a solder sheet, a solder-plated metal sheet, and a copper alloy sheet is used, as in the present invention, the formation of the punched hole filled with the conductor is more easily and surely formed than in conventional methods (specification, page 43, lines 7-23). The Baker patent does not disclose, or in any way suggest, using a conductive metal sheet selected from a solder sheet, a solder-plated metal sheet, and a copper alloy sheet or the advantages of using such materials.

As discussed above, because the Baker patent does not disclose or suggest using a conductive metal sheet selected from a solder sheet, a solder-plated metal sheet, and a copper alloy sheet as required in the amended claims, the Baker patent does not anticipate, or otherwise suggest, the amended claims. Therefore, the rejection of claims 116-120 and 135-136 under 35 U.S.C. § 102(b) should be withdrawn.

Claims 116-120 and 135-136 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,392,164 to Iwaki (hereinafter “the Iwaki patent”). The Iwaki

patent was filed in the United States on October 14, 1999. The present application claims priority to Japanese Application No. 144275/1999, filed May 25, 1999. Applicants submit herewith a Declaration Under 37 C.F.R. § 1.131 by present co-inventors Toshiyuki Nakamura, Hideto Tanaka, Akira Ichiryu, Motonobu Takahashi, Masahito Ishii, and Daisuke Arai. In the 131 Declaration, the inventors attest that Japanese Application No. 144275/1999 discloses the invention as claimed in the present application.

The relevant aspects of 35 U.S.C. § 102(e) are:

A person shall be entitled to a patent unless ...

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

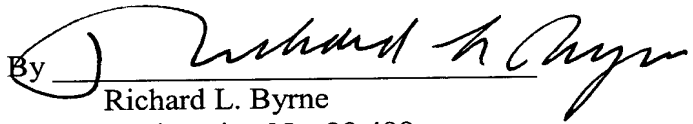
The priority document, Japanese Application No. 144275/1999, was filed on May 25, 1999 in Japan, a corresponding international application was subsequently timely filed on January 5, 2000, and a United States national phase application was timely filed on January 24, 2001. All of the referenced applications were filed within the time frames required by the Japanese Patent Office, the Patent Cooperation Treaty, and the United States Patent and Trademark Office, respectively. The timely filing of each corresponding application demonstrates the required evidence of conception, diligence, and constructive reduction to practice of the claimed invention. Therefore, the present invention predates the United States filing of the Iwaki patent, and it is no longer a valid reference under 35 U.S.C. § 102(e) because Applicants meet the requirement that the invention was not described in “an application for patent by another filed in the United States before the invention thereof by the applicant for patent.”

Therefore, the rejection of claims 116-120 and 135-136 under 35 U.S.C. § 102(e) should be withdrawn

Reconsideration of the rejections and objections, entry of the revised drawings, and allowance of claims 116-118, 120 and 136 are respectfully requested.

Respectfully submitted,

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Marked-Up Versions of Paragraphs

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In the present invention, the resin sheet is preferably a sheet formed from an insulating resin, and the resin sheet is more preferably a sheet formed from at least one insulating resin selected from the group consisting of polyimide, polyester, polypropylene, polyphenylene sulfide, polyvinylidene chloride, [Eval] EVAL, an ethylene-vinyl alcohol copolymer available from Kurary Co., LTD., Osaka, Japan, glass epoxy and a BT resin.

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The resin sheet 18 employable herein is a sheet of polyimide, polyester, polypropylene, polyphenylene sulfide, polyvinylidene chloride, [Eval] EVAL, an ethylene-vinyl alcohol copolymer available from Kurary Co., LTD., Osaka, Japan, glass epoxy, a BT resin or the like.

Marked-Up Versions of Claims 116, 120, and 136

116. (Once Amended) A printed wiring board-forming sheet comprising an insulating resin sheet having a through hole inserted and filled with a conductive metal chip of substantially the same shape as the hole, wherein the conductive metal chip is formed by punching at least one conductive metal sheet selected from the group consisting of a solder sheet, a solder-plated metal sheet and a copper alloy sheet.

120. (Once Amended) The printed wiring board-forming sheet as claimed in claim 116, wherein the insulating resin sheet is made of at least one selected from the group consisting of polyimide, polyester, polypropylene, polyphenylene sulfide, polyvinylidene chloride, [Eval] ethylene-vinyl alcohol copolymer, glass epoxy and a BT resin.

136. (Once Amended) The printed wiring board-forming sheet as claimed in claim 117, wherein the insulating resin sheet is made of at least one selected from the group consisting of polyimide, polyester, polypropylene, polyphenylene sulfide, polyvinylidene chloride, [Eval] ethylene-vinyl alcohol copolymer, glass epoxy and a BT resin.

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